In [12]:
```
pip install geopy shapely folium
```

```
Requirement already satisfied: geopy in c:\users\lenovo\anaconda3\envs\rstudio
\lib\site-packages (2.4.0)
Requirement already satisfied: shapely in c:\users\lenovo\anaconda3\envs\rstudi
o\lib\site-packages (2.0.1)
Collecting foliumNote: you may need to restart the kernel to use updated packag
es.
  Downloading folium-0.14.0-py2.py3-none-any.whl (102 kB)
     ---------------------------------- 102.3/102.3 kB 245.4 kB/s eta 0:00:00



[notice] A new release of pip is available: 23.1.2 -> 23.2.1
[notice] To update, run: python.exe -m pip install --upgrade pip

Requirement already satisfied: geographiclib<3,>=1.52 in c:\users\lenovo\anacon
da3\envs\rstudio\lib\site-packages (from geopy) (2.0)
Requirement already satisfied: numpy>=1.14 in c:\users\lenovo\anaconda3\envs\rs
tudio\lib\site-packages (from shapely) (1.21.6)
Collecting branca>=0.6.0 (from folium)
  Downloading branca-0.6.0-py3-none-any.whl (24 kB)
Requirement already satisfied: jinja2>=2.9 in c:\users\lenovo\anaconda3\envs\rs
tudio\lib\site-packages (from folium) (3.0.2)
Requirement already satisfied: requests in c:\users\lenovo\anaconda3\envs\rstud
io\lib\site-packages (from folium) (2.30.0)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\lenovo\anaconda3\env
s\rstudio\lib\site-packages (from jinja2>=2.9->folium) (2.1.2)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\lenovo\anac
onda3\envs\rstudio\lib\site-packages (from requests->folium) (3.1.0)
Requirement already satisfied: idna<4,>=2.5 in c:\users\lenovo\anaconda3\envs\r
studio\lib\site-packages (from requests->folium) (3.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\users\lenovo\anaconda3
\envs\rstudio\lib\site-packages (from requests->folium) (1.26.15)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\lenovo\anaconda3
\envs\rstudio\lib\site-packages (from requests->folium) (2021.10.8)
Installing collected packages: branca, folium
Successfully installed branca-0.6.0 folium-0.14.0
```

In [13]:
```
from geopy.distance import geodesic
from shapely.geometry import Point, Polygon
import folium
```

In [14]:
```
# Define the coordinates for the geofenced area (a square in this case)
geofence_coordinates = [(40.7128, -74.0060), (40.7128, -73.9860), (40.7228, -73.9
```

In [15]:
```
# Create a Shapely Polygon object from the geofence coordinates
geofence_polygon = Polygon(geofence_coordinates)
```

In [16]:
```
# Define a point to check if it's inside the geofenced area
point_to_check = Point(40.718, -73.998)  # Latitude, Longitude
```

In [17]:
```
# Check if the point is inside the geofenced area
if geofence_polygon.contains(point_to_check):
    print("Point is inside the geofenced area.")
else:
    print("Point is outside the geofenced area.")
```

```
Point is inside the geofenced area.
```

In [18]:
```
#Visualize the geofenced area using Folium
m = folium.Map(location=[40.7157, -73.9860], zoom_start=14)
folium.Polygon(geofence_coordinates, color='blue', fill_opacity=0.2).add_to(m)
folium.Marker([point_to_check.x, point_to_check.y], popup="Point to check").add_t
m.save('geofenced_area_map.html')
```

In [ ]:
```

```

In [17]:
```
# Check if the point is inside the geofenced area
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else:
    print("Point is outside the geofenced area.")
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```

```
Point is inside the geofenced area.
```

In [ ]: